Amendments to the Specification:

Please insert the following paragraph prior to the paragraph beginning "**FIG. 1** depicts" on page 6 at line 14:

FIGS. 1A-1G illustrate steps of embodiments of the present methods.

Please replace the two paragraphs beginning with "**FIG. 1** depicts" on page 6 at line 14 with the following two paragraphs:

FIG. ~~1~~2A depicts the red-green-blue (RGB) color space.

FIG. 2B depicts the hue-saturation-value (HSV) color space.

Please replace the paragraph beginning at line 17 on page 10 with the following paragraph:

The terms "comprise" (and any form of comprise, such as "comprises" and "comprising"), "have" (and any form of have, such as "has" and "having"), and "include" (and any form of include, such as "includes" and "including") are open-ended linking verbs. As a result, a method or a device (e.g., a computer readable medium or a computer chip) that "comprises," "has," or "includes" one or more steps or elements possesses those one or more steps or elements, but is not limited to possessing only those one or more elements or steps. Thus, a method "comprising" comparing a subject color medical image to normal color medical image data (see step **50** in **FIGS. 1A, 1B** and **1C**); and identifying abnormal pixels from the subject color medical image (see step **100** in **FIGS. 1A, 1B** and **1C**) is a method that includes these two steps, but is not limited to possessing only the two recited steps. For example, the method also covers methods with the recited two steps and additional steps such as displaying a

histogram that includes (i) saturation information about the subject color medical image and (ii) saturation information about the normal color medical image data, and/or displaying the subject color medical image and highlighting areas of the subject color medical image that have a saturation that is greater than normal (see step **120** in **FIG. 1C**).

Please replace the paragraph beginning at line 12 on page 12 with the following paragraph:

The invention provides methods and devices for analyzing and displaying a color medical image or images (see step **30** in **FIGS. 1D** and **1E**) in a way that allows the surgeon or operator to evaluate objective, quantitative aspects of the color medical image to aid him or her in the diagnosis and/or treatment of the tissue under analysis.

Please replace the paragraph beginning at line 8 on page 16 with the following paragraph:

The subject color medical image used in certain of the present methods may be an image that is captured initially in gray scale with a camera (such as a CCD camera) that is part of a medical device such as an endoscope (e.g., a bronchoscope; see step **11** in **FIG. 1G**). The endoscope may be attached to a cart containing a monitor, a light source, and the electronics that can be used to process and display the acquired images. The light source may be a precision light source that creates white light using a xenon lamp. A rapidly rotating color wheel may be placed between the light source and the endoscope. The wheel may contain red, green, and blue filters spaced at 120 degrees from each other. Although the light emitted from the distal end of the endoscope will be repeatedly flashing red, green and blue, that light will appear white because mixing these three colors creates white light. The electronics may be configured to

convert the gray scale (commonly called "black and white") image or images obtained from the CCD camera into a color image or images for display, using the process of "false coloring."

Please replace the paragraph beginning at line 17 on page 17 with the following paragraph:

In one embodiment **(FIG. 1A)**, the invention is a method that involves comparing a subject color medical image to normal color medical image data (step **50**; see also **FIGS. 1B** and **1C**); and identifying abnormal pixels from the subject color medical image (step **100**; see also **FIGS. 1B** and **1C**). The acquisition of subject color medical images and normal color medical image data consistent with the present methods may involve acquiring medical images in a color space that is device-dependent (see step **10** in **FIGS. 1B** and **1D**) and, as a result, difficult to understand and interpret by humans. Another problem associated with acquiring images of the same structure under, for example, the same conditions with different imaging systems in device dependent color space is that the images that are acquired may be different and difficult to compare. As a result, it may be useful to convert the device dependent color spaces in which the subject color medical images may initially be taken into a device independent color space (see step **20** in **FIGS. 1B**, **1D**, and **1F**). The following section describes color spaces generally, and gives examples of device-dependent and device-independent color spaces, as well as examples of how to convert between the two.

Please replace the paragraph beginning at line 19 on page 20 with the following paragraph:

The image data from the Olympus bronchoscope described above may be acquired in the classical red-green-blue (RGB) color space (see step **12** in **FIG. 1F**). The RGB color space is an additive color space represented by a unit cube (see **FIG. ~~1~~2A**) in which each pixel is represented by the weighted sum of the three main primary colors (red, green, and blue channels). The image pixels are represented using 8 bits per channel, where zero indicates no contribution of that primary color and 1 (or 255) indicates the maximum contribution of that primary color to that particular pixel. The red (R), green (G), and blue (B) components of each pixel are known as the tristimulus values. The tristimulus values of a pixel in the RGB color space may be denoted by R, G, and B for the red, green and blue channels, respectively. The RGB color system is a device dependent color space. That is, each image acquisition system will have its own unique RGB color space (Kang, 1997; Giorgianni and Madden, 1998).

Please replace the paragraph beginning at line 10 on page 21 with the following paragraph:

Another color space is the hue-saturation-value (HSV) color space. This color space is also normally a device dependent color space. The HSV color space has a hexcone shape as shown in **FIG. 2B** when compared to the RGB color space, which is a cube (**FIG. ~~1~~2A**). In this HSV color space, the additive and the subtractive primary colors occupy the vertices of a hexagon that is the 2D (2-dimensional) projection of the RGB cube along the neutral diagonal line. The 2D projection of the RGB cube governs the hue change. Hue H is represented as an angle about the vertical axis where 0° hue is red, 120° hue is green, and 240° hue is blue. The complementary colors are 180° apart in the 2D projection of the RGB cube (Kang, 1997).

Please replace the paragraph beginning at line 3 on page 28 with the following paragraph:

In either case, the images may then be displayed within a custom built, graphical user interface. The program may display images by simply copying the contents of the "child" buffer into a special display buffer, causing the image to be displayed on the screen (see step **32** in **FIGS. 1F** and **1G**).

Please replace the paragraph beginning at line 1 on page 52 with the following paragraph:

After normal color medical image data has been collected, converted to HSI color space and stored, a subject color medical image may be compared to that data and abnormal pixels may be identified (see step **55** in **FIGS. 1D** and **1E**) in accordance with, for example, the following functions.

Please replace the paragraph beginning at line 12 on page 53 with the following paragraph:

After the program that is built grabs an image into the "child" buffer, it may display it in an image window (see step **32** in **FIGS. 1F** and **1G**). Then the image may be analyzed pixel by pixel to show where the image pixels are located on the color wheel. This mapping process may be termed the "Map Back" function. During this process of mapping the pixels to the color wheel, the program may be effectively displaying the hue and saturation of each pixel in the image. This is because on the color wheel, the distance between the pixel location and the center is a measure of the saturation, while the angle between that line and the red axis is a measure of the hue. However, instead of actually calculating the hue and saturation for every pixel in the image, the program may convert an RGB value directly into a color wheel location using

"vector" arithmetic. The red, green and blue components may be marked on their respective color wheel axes, with the distance from the center corresponding to the magnitude of that component. Then the x and y components of those red, green and blue vectors may be added together to find the location of that pixel on the color wheel. The diagram in **FIG. 27** demonstrates how the location of a pixel with color RGB(128, 51, 230) may be determined. Note that that 128 / 256 =0.5, 51 /256=0.2, 230/256=0.9.

Please replace the paragraph beginning at line 10 on page 54 with the following paragraph:

Once the location of the pixel on the color wheel is determined, it may be highlighted with, for example, a gray or black dot depending on whether that particular color wheel location is said to be normal or abnormal. This may be determined by examining the normal color wheel locations that may be stored in a filed termed the "NormalData.dat" file. If the particular location just calculated is one of those normal locations the dot may be gray, otherwise it may be black. **FIG. 28** demonstrates how, in certain embodiments of the present methods, the pixels from an exemplary bronchoscope image may be mapped onto the color wheel, with gray pixels indicating normal colors and black pixels indicating abnormal colors. Thus, in some embodiments of the present methods, the identification of abnormal pixel(s) may include displaying the abnormal pixels on the subject color medical image(s) <u>(see step **110** in **FIG. 1D**)</u> (or a portion of the same<u>; see step **110'** in **FIG. 1F**</u>) and/or displaying the abnormal pixel(s) on a color wheel in a color or colors (gray and black both being considered colors for this purpose) that are different from the color or colors used to display (or that would otherwise be used to display) normal pixels in those same locations (e.g., on the color wheel).

Please replace the paragraph beginning at line 17 on page 57 with the following paragraph:

The particular saturation histogram shown in **FIG. 30** demonstrates that there are a small numbers of pixels with both larger and smaller saturations than normal (see step **57** in **FIGS. 1F** and **1G**). This is evident because the histogram shows that around 5% and 40% saturation, the green line is above the blue line. These deviations from normal result because the image contains regions of tissue that are both redder than normal and whiter than normal. The redder areas are then highlighted on the original image (see step **112** in **FIG. 1E** and step **112'** in **FIG. 1G**).